

TECHNOLOGICAL CAPABILITIES



Altechna

A company you can rely on

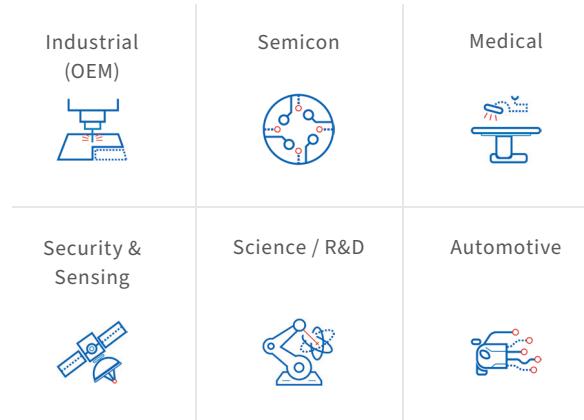
Altechna is a Lithuania-based OEM manufacturer of high LIDT optical equipment – from optical coatings to motorized optomechanical assemblies. We have spent more than 25 years creating and developing complex technological solutions and custom designs for laser optics and related accessories.

Our in-depth knowledge on dielectric coatings and optical designs allows our industrial customers to reconsider their laser geometries and achieve even higher peak levels of power or reduce the weight of commercial products.

From test batch to mass production, the quality and repeatability of each product are assured at our in-house metrology laboratory. So, if your challenge involves anything from femtosecond to continuous-wave technology, we are here to support you with our innovative solutions.

Markets we serve

Altechna's wide variety of optical offerings allow us to provide the best solutions for our customers throughout multiple markets.

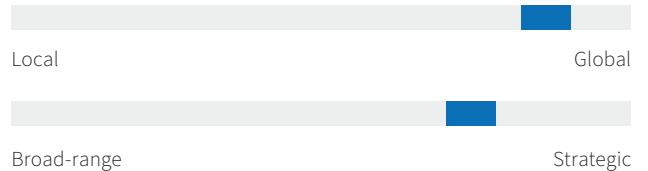


Position

Products:



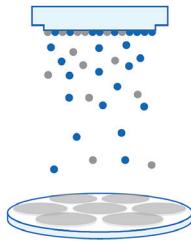
Customers:



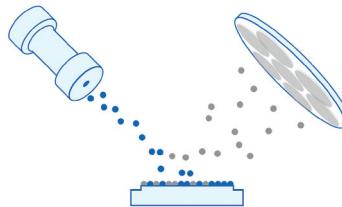
Coating technologies

Altechna is equipped with various advanced in-house technologies for optics manufacturing, which fully cover the needs of a wide spectrum of customers. With 25 years of accumulated know-how and a highly skilled team we are able to achieve impressive results in our custom-optimized optical elements and subassemblies.

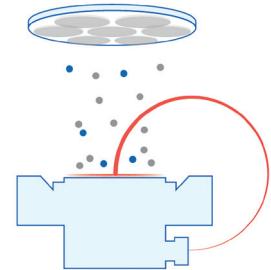
Magnetron Sputtering



Ion Beam Sputtering



Electron Beam Evaporation + IAD



Key features

- The best solution for mass production (518 pcs of 1" substrates)
- Plasma etching for higher LIDT
- Very low scattering and absorption losses
- Excellent solution for custom shape and size substrates
- Exceptional LIDT
- High contrast polarization coatings

Key features

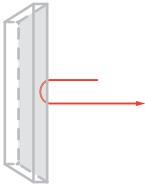
- Complex and long lifetime coatings
- Low absorption coatings
- Very high spectral coating accuracy
- Stress-controlled by complementary processes
- Excellent stability and performance in harsh environments

Key features

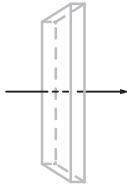
- Custom coatings design
- Low stress coatings
- Wide spectral range - from UV to IR
- High deposition rates
- Best cost-performance ratio

Coating types

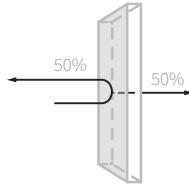
Highly reflective



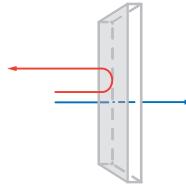
Anti-reflective



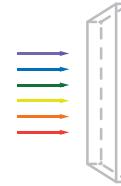
Partially reflective



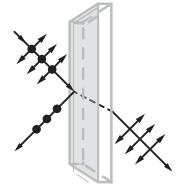
Wavelength separating



Broadband coatings



Polarizing



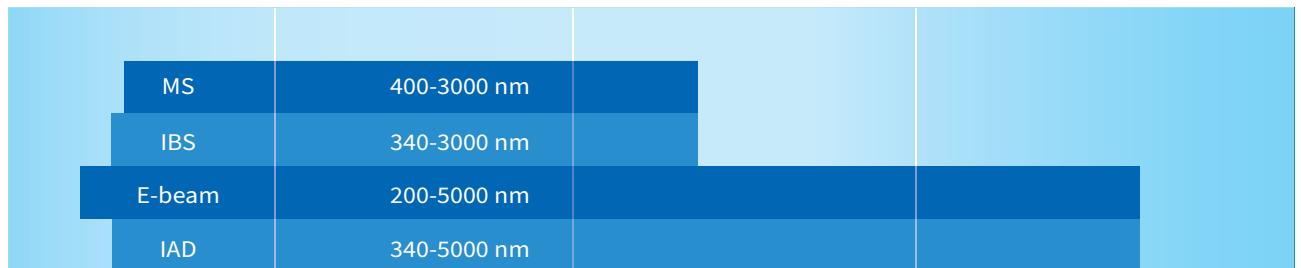
Technology comparison

	MS	IBS	E-beam	IAD
Spectral range	400-3000 nm	340-3000 nm	200-5000 nm	340-5000 nm
Capacity 1**	518	53	90	90
Density	Near bulk	Near bulk	Porous	Dense
Aging effects	No	No	Yes	No
Environmental resistance	High	High	Low	Mid
Maximum reflectance	>99.9%	>99.99%	>99.5%	>99.8%
Minimum reflectance	<0.1%	<0.1%	<0.25%	<0.2%
Extinction ratio	1:1000	1:1000	1:200	1:200
Price**	● ● ○	● ● ●	● ○ ○	● ○ ○

* Maximum capacity varies depending on required spectral specifications.

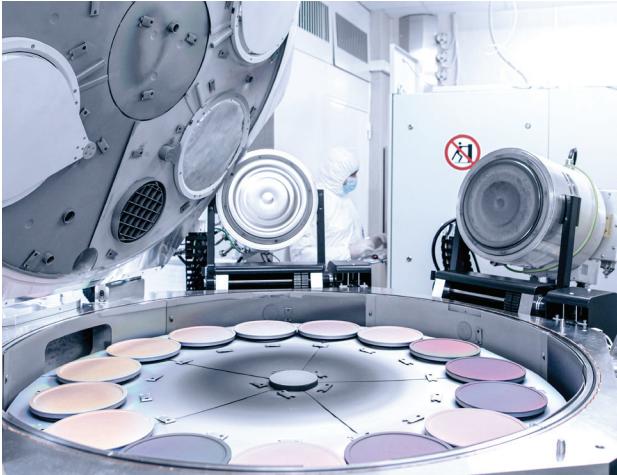
** On a scale from 1 to 3. Number "1" marks the price as low.

Spectral range by technology



Magnetron Sputtering

Magnetron sputtering (MS) is the best option for high-volume production for coatings comparable to Ion Beam Sputtering, at the expense of a slight reduction in surface quality.

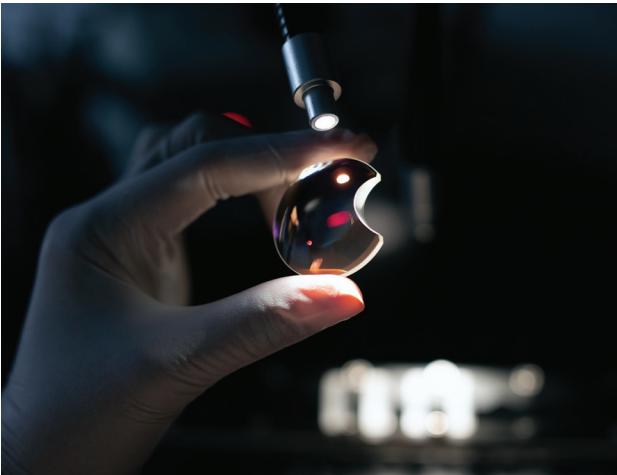


Performance

- Minimum reflectance <0.1%
- Maximum reflectance >99.9%
- Extinction ratio 1:1000
- Absorption <1 ppm

Capacity

- 518 pcs. of Ø 25.4 mm
- 126 pcs. of Ø 50.8 mm
- 42 pcs. of Ø 76.2 mm
- 14 pcs. of Ø 200 mm
- 5 pcs. of Ø 260 mm
- Coating and highly customized mechanical solutions for custom-shaped substrates possible.



Spectral range

- 400-3000 nm

Materials

- Nb₂O₅, SiO₂, Ta₂O₅

Ion Beam Sputtering

Ion Beam Sputtering (IBS) is the best option when extreme process control is required to achieve the highest lossless spectral performance possible in small volumes.



Performance

- Minimum reflectance <0.1%
- Maximum reflectance >99.99%
- Extinction ratio 1:1000

Capacity

- 53 pcs. of \varnothing 25.4 mm
- 11 pcs. of \varnothing 50.8 mm
- 6 pcs. of \varnothing 76.2 – 101.6 mm
- 3 pcs. of \varnothing 101.6 mm
- 1 pcs. of \varnothing 150 mm
- Coating and mechanical solutions for custom-shaped substrates possible.

Spectral range

- 340-3000 nm

Materials

- Al_2O_3 , HfO_2 , Nb_2O_5 , SiO_2 , Ta_2O_5 , TiO_2
- Materials mixture



Electron Beam Evaporation

Electron Beam Evaporation (E-beam) is best solution for a broad range of applications and wavelengths for which price-performance ratio is key.



Performance

- Minimum reflectance <0.25%
- Maximum reflectance >99.5%
- Extinction ratio 1:200

Capacity

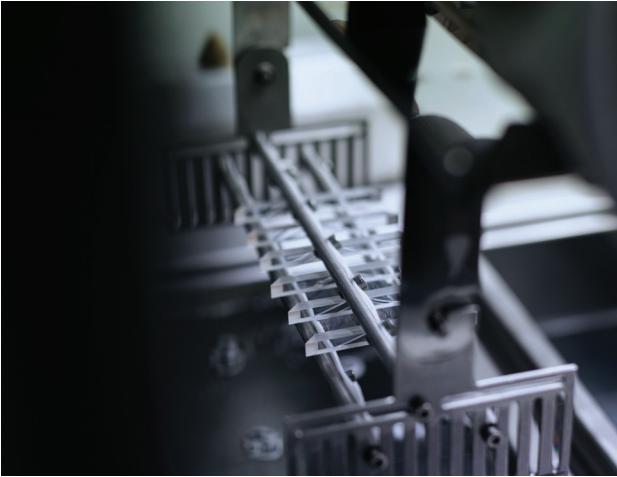
- 90 pcs. of \varnothing 25.4 mm
- 18 pcs. of \varnothing 50.8 mm
- 6 pcs. of \varnothing 76.2 – 101.6 mm
- Limited coating and mechanical solutions for custom-shaped substrates possible.

Spectral range

- 200-5000 nm

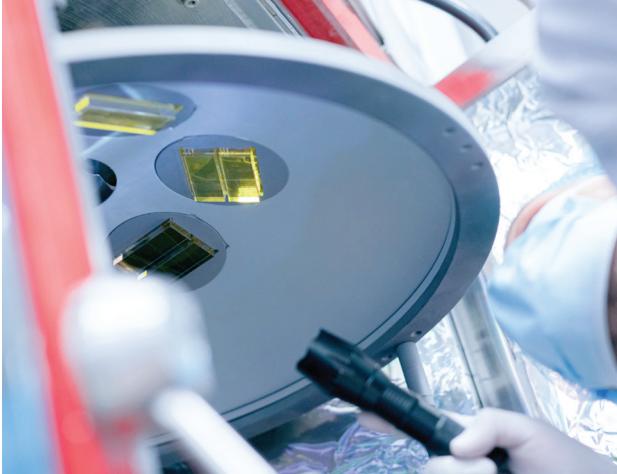
Materials

- Ag, Al, Au
- Al_2O_3 , HfO_2 , Nb_2O_5 , Ta_2O_5 , TiO_2 , ZrO_2
- LaF_3 , MgF_2



E-beam with Ion Assisted Deposition

E-beam with plasma assistance when you need to enhance coating environmental stability and push E-beam capabilities further.



Performance

- Minimum reflectance <0.2%
- Maximum reflectance >99.8%
- Extinction ratio 1:200

Capacity

- 90 pcs. of \varnothing 25.4 mm
- 18 pcs. of \varnothing 50.8 mm
- 6 pcs. of \varnothing 76.2 – 101.6 mm
- Limited coating and mechanical solutions for custom-shaped substrates possible.

Spectral range

- 340-5000 nm

Materials

- HfO_2 , Nb_2O_5 , Ta_2O_5 , TiO_2 , ZrO_2



Optomechanical assemblies

Altechna has opened a new chapter in its optical manufacturing journey: with an increase in demand for optomechanical and optical assemblies, the company is strengthening and expanding its service by introducing a new line – bespoke assemblies and subassemblies based on customers' designs.

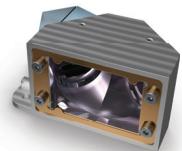
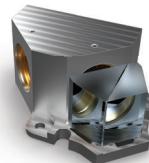


Optical parts

- Prisms, waveplates, lenses and other glass parts optically contacted or cemented together.

Optomechanical parts

- Optics mounted on various types of metal mounts and housings, either fixed or shifting.



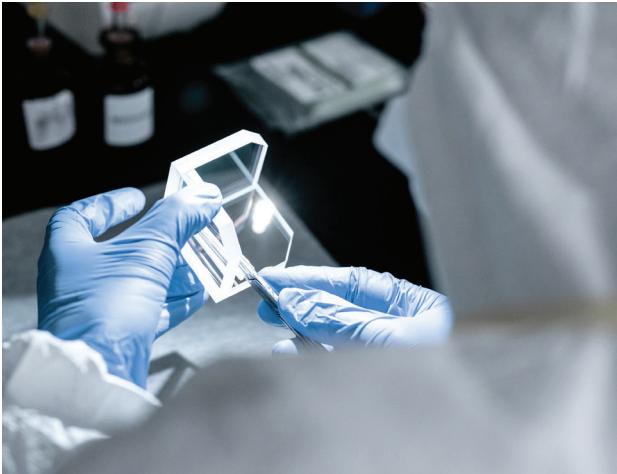
Type of work offered

Altechna offers a variety of assembly and manufacturing solutions. Starting with exact build-to-print projects based on customer instructions, and ending with fully custom-designed solutions, these are tailored to fit the specific end-user needs.



Any work is accompanied by

- Rapid reviews of project needs by a dedicated engineering team.
- A design-to-cost mentality.
- A clear information flow, strict deadlines, and full customer involvement.
- Quality control pre- and post-manufacturing, all carried out in-house.
- Full traceability of each manufacturing stage.

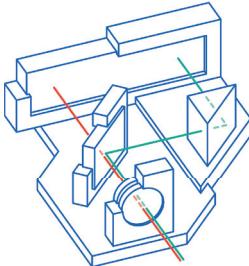


Experienced team guarantee

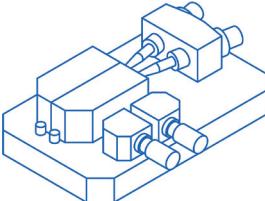
- Excellent tooling design, assembly processes and quality control all carried out in-house by experienced team.
- Experience working with a wide variety of metal, glass, and plastic materials.
- Strong emphasis on customer support to identify critical aspects of projects.

Tailored to fit the specific end-user needs

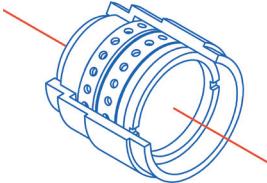
Complex



Custom tooling



Standard



Benefits



Time and resource saving



Space-saving



Pre-built and modules – ready to be incorporated into the system



Cost saving



Increased yield



Continuous post-manufacturing technical support

Optomechanical assemblies

Preparation

Dedicated engineers and project managers



Special build-to-print dedicated team

- Mechanical and coating engineers solely responsible for the projects.
- Leading to a prompt assessment of the provided project data.
- Emphasis on communication: both during frequent visits and teleconferences.
- Both managerial and technical staff can communicate in English.

During production

Made in EU



Complete traceability of the supply chain



Quality system



Customer involvement



Reliability

- In-house production facility in Lithuania.
- Complete traceability of the supply chain.
- Flexibility in the production process: we are quick in implementing changes even for the ongoing manufacturing.
- Quality gates are implemented for each important step of the production.
- Complete dissemination of information, constant contact with the customer in all steps of our production processes.

During production

Equipment dedicated to build-to-print projects



Staff training sessions



Equipment and staff

- Equipment and premises are specially dedicated for build-to-print projects.
- Constant and repeated training sessions for our production staff.
- We are open to invest in and acquire the required equipment to ensure the smooth course of a project.

Post-production

Trouble-free warranty process



Continuous post-manufacturing technical support



- All parameters described in the final item requirements are measured.
- The customer receives a quality warranty allowing them to be certain that they will be able to insert an item into their system directly after taking it out of the box.
- Continuous support: both managerial and technical support in a case where any issues occur.

Equipment

In recent years, Altechna has strengthened by investing in areas of manufacturing, including a newly built cleanroom area and equipment as well as investing in team members' technical trainings.

We offer:

- A 21 m² ISO 7 cleanroom working area, including active particle monitoring with relative humidity and temperature controls.
- A choice of various acrylic-based and epoxy adhesives.
- Dedicated four-stage ultrasonic cleaning plant that provides spot-free zero-residue results.
- Vacuum outgassing oven, with temperatures up to 110 °C and <0.5 mbar
- Custom measurement-system set-ups based on the final application, replicating the customer's system and requirements to test the goods.



Quality assurance

Our production capabilities, together with in-house quality control and a metrology laboratory let us offer top-notch quality and repeatability for each product we ship. Our goal is to ensure that after fabrication, every element passes the final steps of quality testing, such as those relating to shape, surface quality, surface figure, dimension tolerances, parallelism and spectral characteristics.

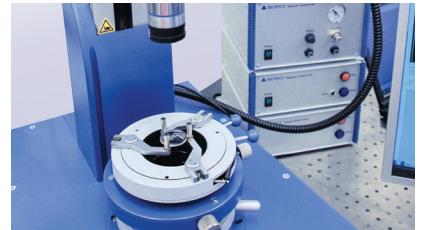
Interferometer



Goniometer



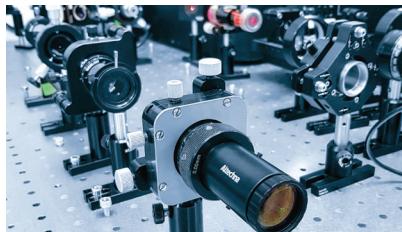
Spherometer



Dispersion measurement instrument



Set of CW lasers



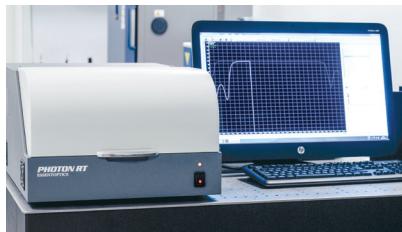
Temperature and humidity chamber



Surface quality inspection



Spectrophotometer



Automatic CNC vision system



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